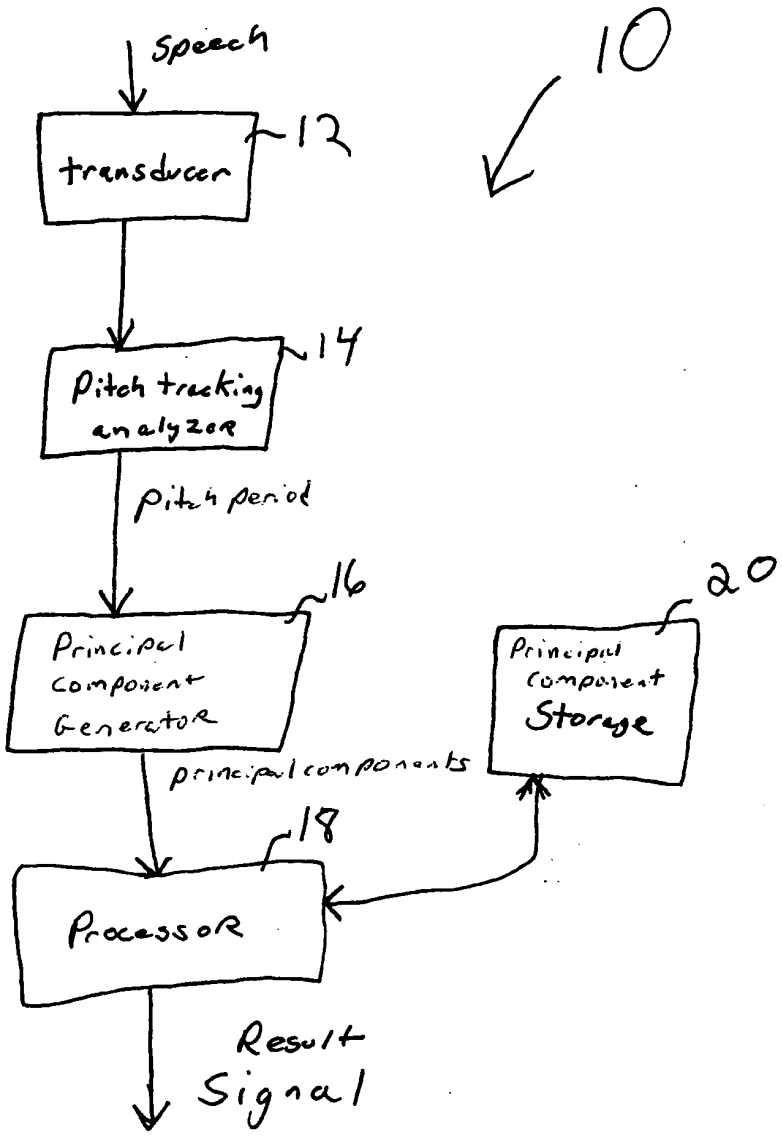
Speech
10
transducer
12
Pitch tracking analyzer
14
pitch period
16
Principal component Generator
20
Principal component Storage
principal components
18
Processor
Result Signal

FIG. 1

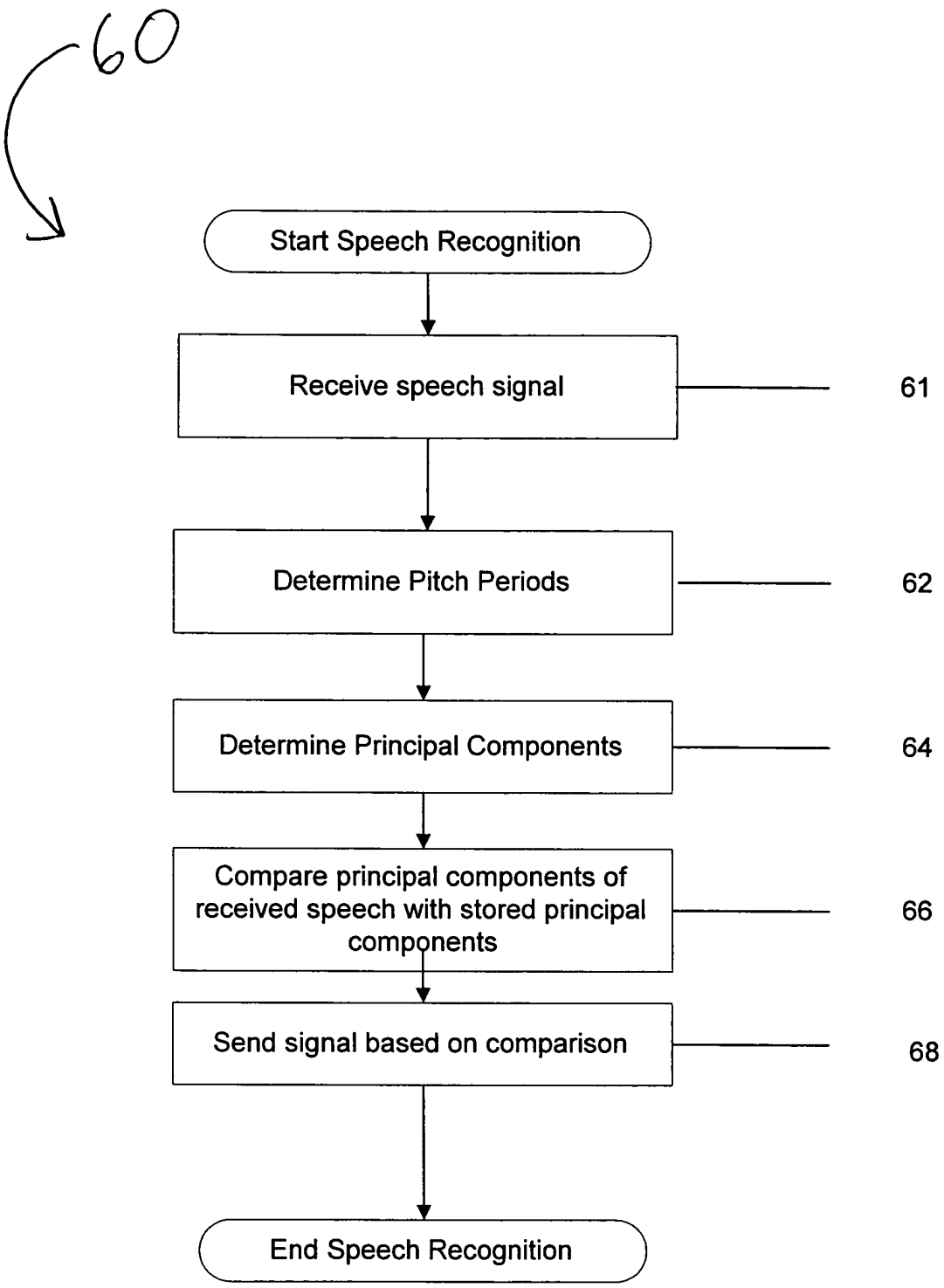
60
Start Speech Recognition
Receive speech signal
61
Determine Pitch Periods
62
Determine Principal Components
64
Compare principal components of received speech with stored principal components
66
Send signal based on comparison
68
End Speech Recognition

FIG. 2

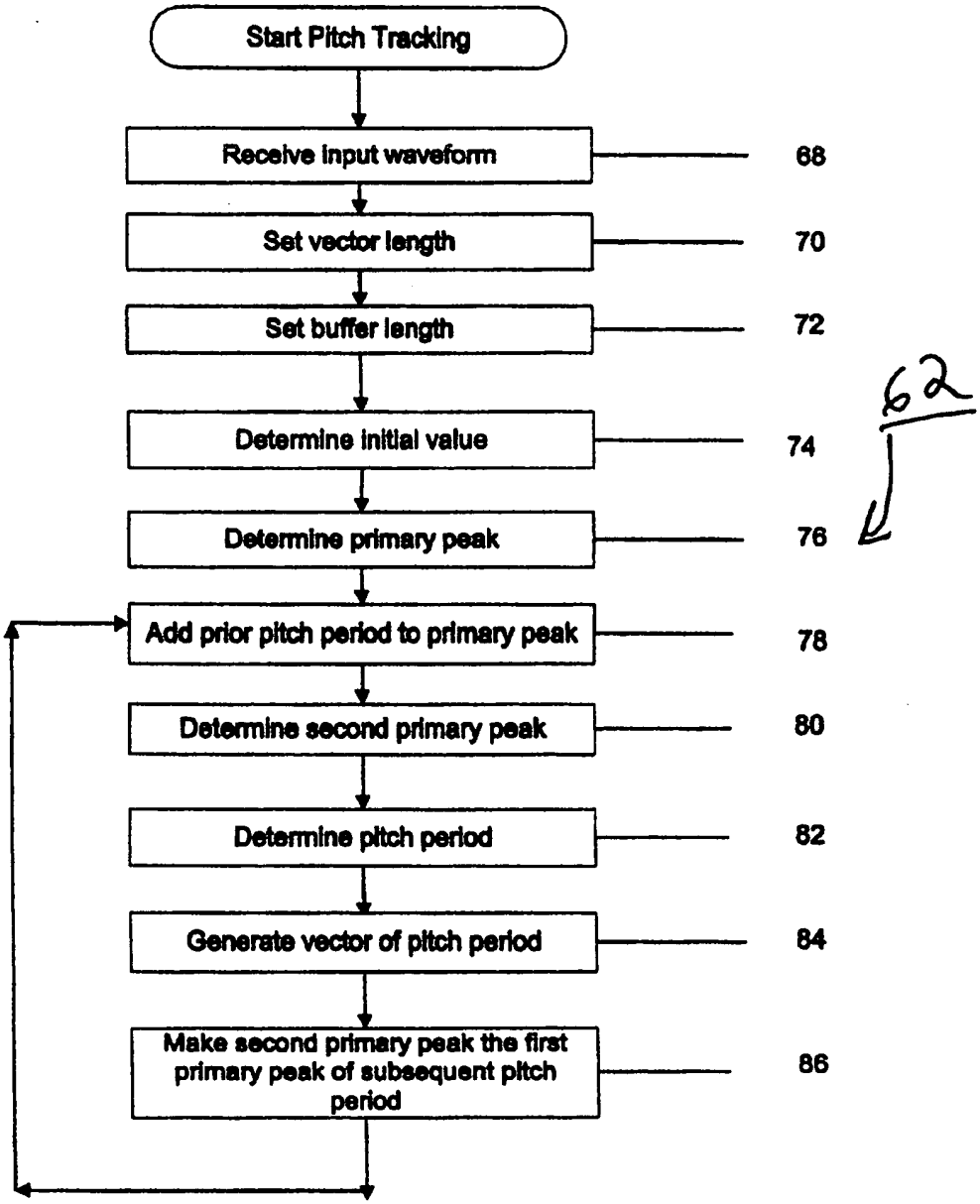
Start Pitch Tracking
Receive input waveform
68
Set vector length
70
Set buffer length
72
62
Determine initial value
74
Determine primary peak
76
Add prior pitch period to primary peak
78
Determine second primary peak
80
Determine pitch period
82
Generate vector of pitch period
84
Make second primary peak the first primary peak of subsequent pitch period
86

FIG. 3

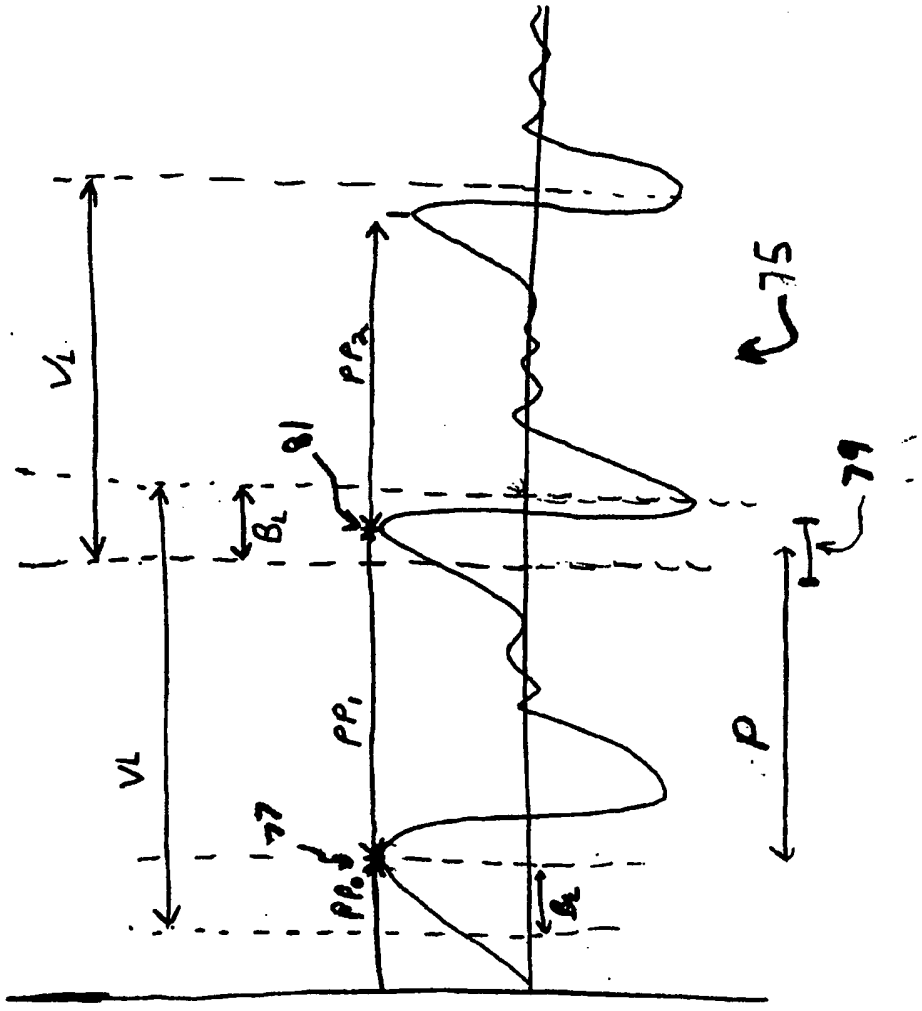

FIG. 4

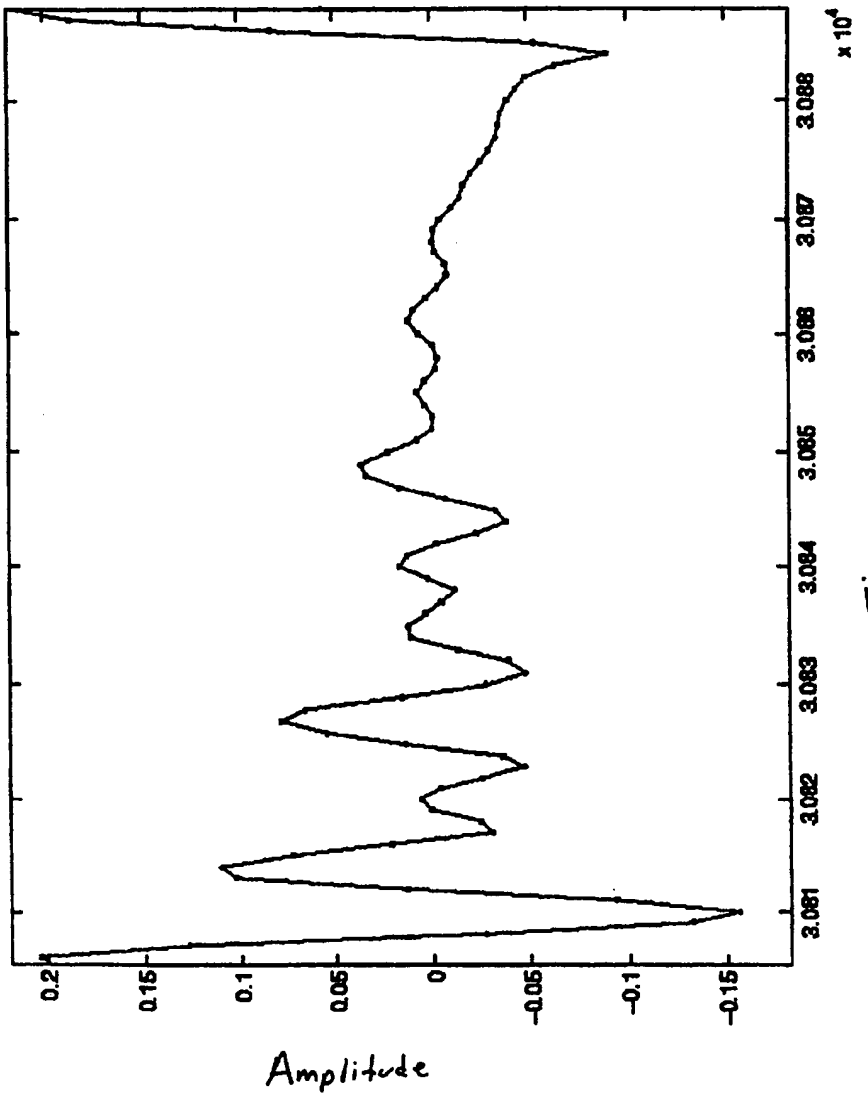
0.2
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
Amplitude
3.081
3.082
3.083
3.084
3.085
3.086
3.087
3.088
x 10^4
Time

FIG. 5

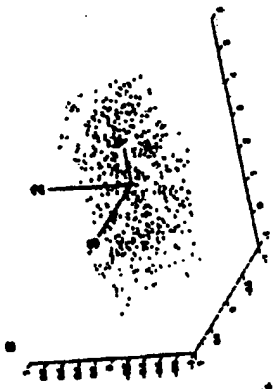

FIG. 6C

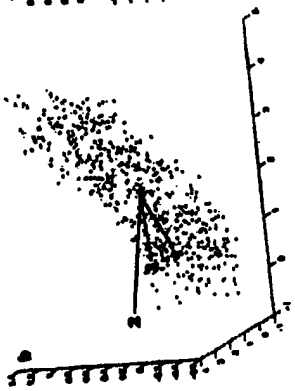

FIG. 6B

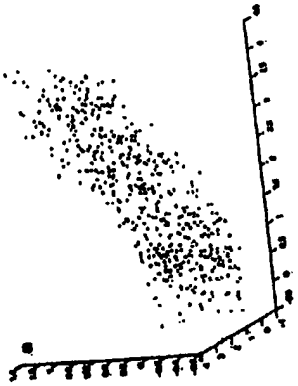

FIG. 6A

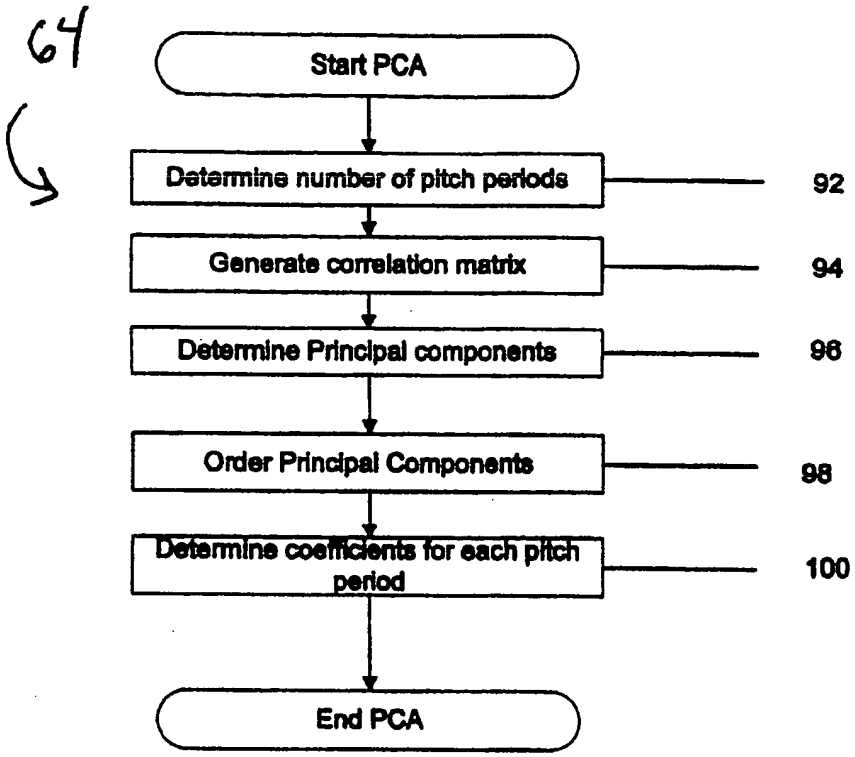
64
Start PCA
Determine number of pitch periods
92
Generate correlation matrix
94
Determine Principal components
96
Order Principal Components
98
Determine coefficients for each pitch period
100
End PCA

FIG. 7

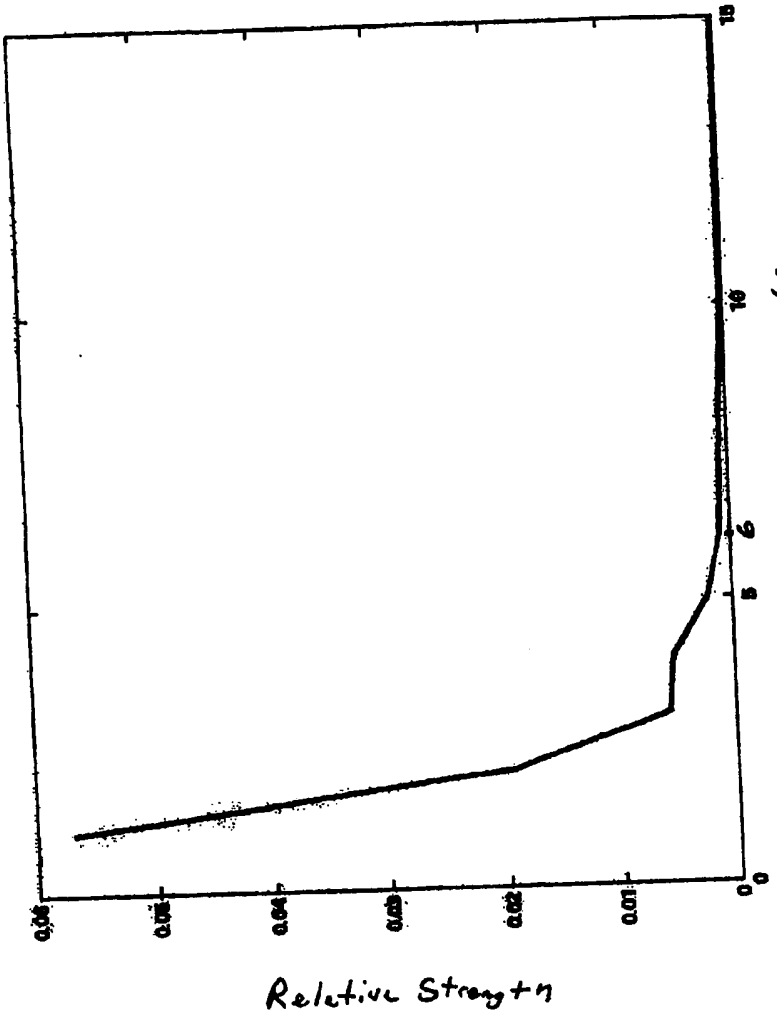
0.06
0.05
0.04
0.03
0.02
0.01
0
5
6
10
15
Relative Strength
Principal Components

FIG. 8

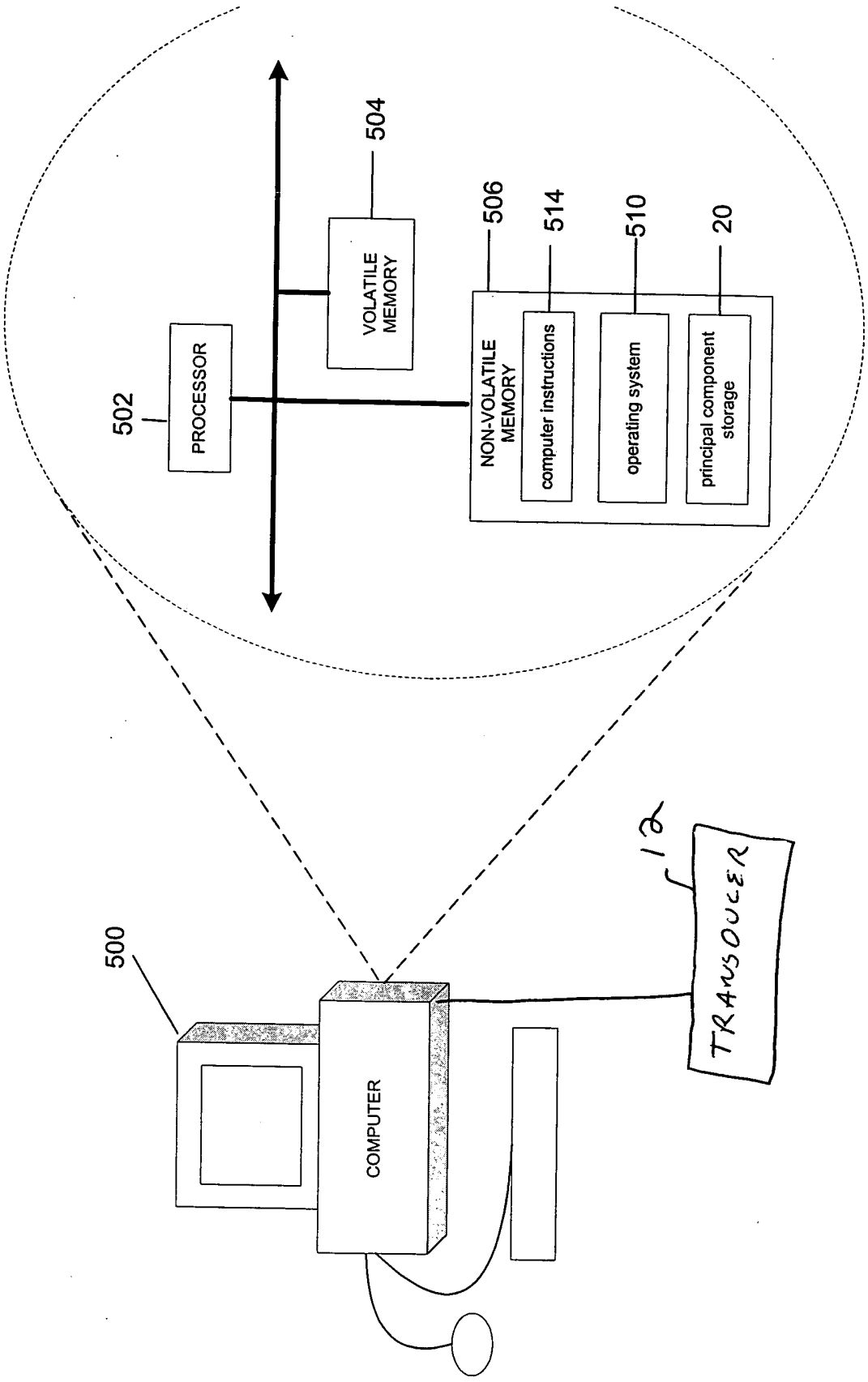
504
506
514
510
20
VOLATILE MEMORY
502
PROCESSOR
NON-VOLATILE MEMORY
computer instructions
operating system
principal component storage
500
COMPUTER
12
TRANSDUCER

FIG. 9